The sacculus is the formative secreting organ, analogous to the acini of known secreting glands.

B. The splenic pulp consists, like the contents of the sacculi, of plasma and corpuscles; but the nucleated cells are extremely few, and mostly granular—hence the reason why they were not detected by observers who did not examine the sacculi apart from the pulp with sufficient care; the plasma is full of granules, which are distinct, and infinitely more abundant, than within the sacculi; and the corpuscles, instead of a regular uniform shape, are mostly angular, deformed, with great variety of shape and appearance, and *breaking up into granules*. These corpuscles are often, also, of a reddish colour; and, besides them, coloured semi-crystalline particles, of a deep red or yellow hue, and whose true relation is not yet perfectly made out, are found in the pulp.

The pulp is, therefore, that part of the glandular apparatus where the corpuscles of the spleen become disintegrated and dissolved into granules and plasma; and, if the sacculi are analogous to acini, it is probable that they burst and effuse their contents into the pulp, where they undergo degenerating changes, becoming thus fit for absorption: the pulp being a reservoir or *duct*, in which the secreted product is lodged for a time, and undergoes the ulterior changes of maturation and solution.

II. The veins are the absorbent elements of the spleen, and carry away its secretion.

This is rendered probable by their extraordinary number and size; by their abundant ramifications in the *pulp* (while the *arteries* are spread over the secreting *sacculi*); by evidence derived from the composition of the splenic venous blood, as shown in Béclard's recent comparative analysis of splenic and other venous blood (*Archives Générales de Médecine*, Oct., Nov., Dec., 1848); and by general analogy in the nature, functions, and relations of the portal circulation in the adult and in the fœtus.

III. The blood circulation within the spleen is peculiar, but the peculiarities are not confined to the venous circulation, as has been generally supposed, but are common to it with the arterial. Its general principle is, "the sudden and immediate transition from very large to very small vessels," which renders the circuit of the blood-current extremely short. This general rule does away with all the minor differences of vascular distribution found in the spleens of man, the horse, dog, &c., compared with those of the sheep, bullock, &c.

The venous cells of the spleen, though, under certain circumstances, an undoubted appearance, are entirely artificial, and always produced by methods of preparation, on which no reliance should be placed.

There is no satisfactory evidence that the lymphatics are the excretory ducts of the spleen; nor that its fibrous tunic or trabeculæ are muscular, or anything more than very elastic.

Conclusion.—The spleen is a true secreting gland; and its product, which is some organized or organizable albuminous compound, is absorbed into the venous blood of the portal system, and *contributes*, but is not essential to nutrition.

The elements here mentioned are constant: they are easily made out in the spleens of the bullock, sheep, &c., *when quite fresh*. In the human spleen, they are in general less easily analyzed; but the microscope shows them to be identical, and, further, thus affords the means of recognizing and establishing the existence of the Malpighian sacculi, when (as not unfrequently happens in the human spleen) they are not visible to the naked eye, or, at least, not distinguishable from the pulp.—*Med. Times*, April 21, 1849.

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4. *On the Medullary Substance of Bones.* By MM. Gosselin and Regnauld.—Most anatomists have in general terms described the existence of a medullary membrane supporting and surrounding the medullary substance; but when they enter into particulars concerning it, they declare its tenuity to be such that its existence is demonstrated with difficulty. In the present paper, the authors declare that careful examination conducted by the naked eye, the microscope, and chemical tests, in a great variety of cases, have convinced them that, in point of fact, no such membrane does exist, the doubts already expressed by Ruysch, in respect to it, becoming thus fully confirmed.

The medullary substance presents very different appearances, not only in different species of animals, but even in different individuals. The modifications may be classed under two principal heads, which, for distinction's sake, we may term the fatty medulla and the gelatiniform medulla. In the first of these, it almost entirely consists of semi-fluid, fatty substance, and of extremely delicate vessels forming a network on its surface and in its substance. In the other, there is but a small proportion of fatty matter, the substance then having the appearance and consistence of a red jelly, the vascular network being here still more abundant. Both these varieties are compatible with health, the substance containing more or less fat, according to peculiar predisposition. Disease, however, exerts its influence, and under the operation of inflammation fat is absorbed, that part of the skeleton then presenting the gelatiniform type, even while the other parts present the fatty. Long-continued general disease may similarly affect all the bones; but the differences which result are so great, that no general rule can be laid down. Age, however, has a more marked and constant influence. In early life, the substance is very vascular and gelatiniform, and does not present the colour of fat; but as development advances, the fatty type is gradually assumed, though not completely until after the consolidation of the epiphyses. The same appearances present themselves, whether the substance is examined in the medullary canal of a long bone, or in the cellules of the spongy tissue.

Originally, the medullary canal is but a canalicule, containing a much larger artery than the other canalicules, which freely ramifies into the substance of the bone. These and the accompanying venous ramifications afterwards become mingled with some adipose cells, and with a matter which, though not gelatine, much resembles it. As ossification goes on, this canal becomes enlarged by the absorption of its inner layers, for the purpose, as shown by M. Flourens, of affording the long bones a greater power of resistance without increasing the quantity and weight of osseous matter. In proportion as this absorption of the innermost layers of the canal takes place, the adipose or gelatiniform matter is deposited, filling up the empty spaces, supporting the vessels, and keeping an abundant vascular network applied against the internal surface of the canal; its office, though important, being purely mechanical. The fat of the bones, then, differs from that of other parts of the body in not being divided into lobes or lobules by prolongations of the membranous areolar tissue. The cells are separated only by delicate capillaries, and are mingled with more or less gelatiniform matter. Just as the vascularity is great, the proportion of fatty matter is smaller. It would seem that the deposition of the fat compresses and causes the disappearance of a portion of the vessels. In this way, when active nutrition is required, as in the child, there is abundance of vessels with little fat, while, in the aged, there is a larger proportion of fat and fewer vessels. This connection is observed also in disease. Thus, in osteitis, the portion of the bone which is red with vessels has a less proportion of fat than the other parts, which may possess even a larger proportion than usual. So in that singular change in bones termed their fatty condition, the naked eye can detect no vessels in the medullary substance, sufficient of them only remaining to maintain the slow and incomplete nutrition of the part.

Denying the existence of a medullary membrane, the physiological and pathological actions attributed to it must be otherwise explained. We cannot say, with M. Flourens, that it effects the absorption of the inner layers of the canal, this being in reality accomplished by the capillary vessels supported by the medulla. So, too, a membrane takes no part in the formation of callus, and in accomplishing the various changes supervening upon osteitis; but the material for all these may be amply supplied by the vascular network.—*Archives Générales*, t. xx. pp. 275–74.

[We should be disposed to regard the "gelatiniform matter" of these authors as an organizable *blastema*, the incipient condition of fibrous or fibro-membranous tissue.]—*Brit. and For. Med.-Chirurg. Rev.*, Oct. 1849.

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5. *On the Minute Structure of the Papillæ and Nerves of the Tongue of the Frog and Toad.* By Augustus Waller, M.D.—The attention of physiologists was first di-